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(54) **PACKAGING INSERT AND CARTONING PROCESS COMPRISING A PLURALITY OF PACKS**

(57) A grouping unit (2) is described for a cartoning machine (1) for the production of a package (C) comprising, on the inside, a plurality of packs (P) for smoking articles arranged next to one another and along a number of rows and an insert (I) that supports the group of packs (P). The grouping unit (2) is provided with an insert feeding assembly (6) configured to feed, one after the other, the inserts (I) along a first conveying direction (D1); a pack feeding assembly (12) for feeding the packs (P) configured to feed groups of packs (P), wherein said packs (P) are grouped along a number of rows of packs (P) arranged next to one another and are fed in succession along a second conveying direction (D2); a blank feeding assembly (13) configured to feed the paper/cardboard flat blanks (B) along a third conveying direction (D3); a grouping assembly (10) configured to receive the group of packs (P), the blank (B) and the insert (I) and wherein the insert (I) is interposed between the group of packs (P) and the flat blank (B) and with the upper wall (SW) facing the group of packs (P) and with a lower wall (BW) facing a panel (B*) of the flat blank (B) defining a lower wall of the package (C); a wrapping assembly (15) configured to at least partially fold the flat blank (B) and wrap it around the assembly formed by the group of packs (P) and the insert (I) so as to obtain a semi-finished package (C); and a pushing element (14) which is movable along a fourth conveying direction (D4) and is configured to push the group of packs (P) until it intercepts the insert (I), which is arranged with the upper wall (SW) in contact with the group of packs (P) in the area of the grouping assembly (10), and to convey the assembly formed by the group of packs (P) and the insert (I) up to

the area of the wrapping assembly (15).

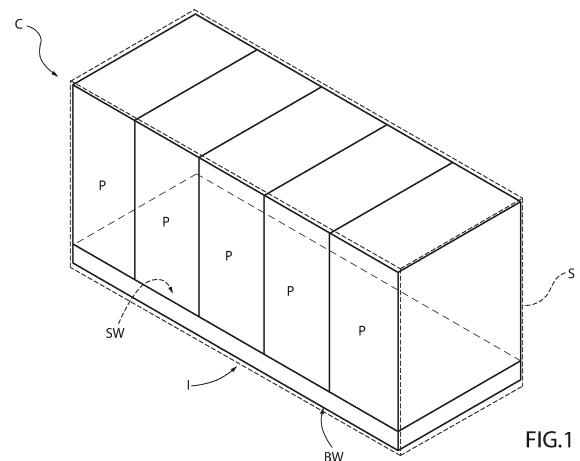


FIG.1

Description

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This patent application claims priority from Italian patent application no. 102023000022230 filed on October 24, 2023, the entire disclosure of which is incorporated herein by reference.

TECHNICAL FIELD

[0002] The present invention relates to a grouping unit for a cartoning machine for the production of a package comprising a plurality of packs for smoking articles and an insert, to a cartoning machine provided with said grouping unit, to a method for the production of a package comprising a plurality of packs for smoking articles and an insert and to a package comprising a plurality of packs for smoking articles and an insert.

PRIOR ART

[0003] Packages comprising, on the inside, a group of packs for smoking articles are widely known, such as for example packs of traditional cigarettes or cigars, packs of electronic cigarettes of the liquid vaporization type, packs of new generation cigarettes without tobacco combustion, etc. Typically, the packs have a parallelepiped shape and are arranged next to one another and along a number of rows, for example two rows of five packs each next to one another.

[0004] In some cases, the package also comprises, on the inside, a support element designed to support the group of packs and made so as to allow the packs to be arranged in a raised position inside the package. The package then comprises an external overwrap that wraps the group of packs and is obtained from a paper/cardboard flat blank folded around the group of packs and comprising a number of panels connected to one another along folding lines; a plurality of said panels is adapted to define the support element which is then obtained by folding said blank during the forming of the external overwrap. In other words, the support element and the overwrap are obtained by folding the same blank.

[0005] Document EP622312B1, for example, describes a package of the type described above wherein the support element and the overwrap are obtained from a single blank.

[0006] However, folding the blank and wrapping the same around the group of packs are complex and are usually carried out using special folding and wrapping units with a high degree of complexity and a considerable number of components.

[0007] EP523612A1 instead describes a grouping unit for a cartoning machine for the production of a package comprising a plurality of packs for smoking articles but without an insert to support the group of packs.

DESCRIPTION OF THE INVENTION

[0008] The object of the present invention is to provide a grouping unit for a cartoning machine for the production of a package comprising a plurality of packs for smoking articles and an insert that is free from the drawbacks of the state of the art and is, in particular, easy, and inexpensive to produce.

[0009] A further object of the present invention is to provide a cartoning machine provided with a grouping unit that is free from the drawbacks of the state of the art and is, in particular, easy, and inexpensive to produce.

[0010] The object of the present invention is to provide a method for the production of a package comprising a plurality of packs for smoking articles and an insert that is free from the drawbacks of the state of the art and is, in particular, easy, and inexpensive to implement.

[0011] A further object of the present invention is to provide a package comprising a plurality of packs for smoking articles and an insert that is free from the drawbacks of the state of the art, which can be obtained by modifying existing cartoning machines and that is, in particular, easy, and inexpensive to produce.

[0012] According to the present invention, a grouping unit for a cartoning machine for the production of a package comprising a plurality of packs for smoking articles and an insert, a cartoning machine provided with said a grouping unit, a method for the production of a package comprising a plurality of packs for smoking articles and an insert and a package comprising a plurality of packs for smoking articles and an insert as established by the attached claim are provided.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] The present invention will now be described with reference to the attached drawings, which illustrate a non-limiting embodiment thereof, wherein:

- Figure 1 is a perspective view of a package comprising a plurality of packs for smoking articles and an insert obtained according to the present invention;
- Figure 2 is a perspective view with parts removed for clarity of a grouping unit obtained according to the present invention for the production of the package of Figure 1; and
- Figures 3 and 4 schematically illustrate in lateral and top elevation the grouping unit of Figure 2.

PREFERRED EMBODIMENTS OF THE INVENTION

[0014] In Figure 1, number 1 denotes as a whole a package C (or carton) comprising, on the inside, a group of packs P for smoking articles. The packs P have a parallelepiped shape and are arranged next to one another and along a number of rows. Advantageously, each package C comprises ten packs P arranged in two rows of five packs P each. The package C also comprises an

insert I that supports the group of packs P; more specifically, the insert I is obtained from paper/cardboard and is defined by a box-shaped body having an oblong shape with two larger side walls that respectively define a lower wall BW and an upper wall SW designed to support the group of packs P and which, in use, is arranged in contact with a lower wall of each pack P. In particular, the insert I has a length that is equal to the overall length of the group of packs P. Finally, the package C comprises an overwrap S that wraps the group of packs P and the insert I by means of a blank B obtained from paper/cardboard; wherein, in use, the lower wall BW is arranged in contact with an inner surface of a base wall of the overwrap S.

[0015] Figure 2 illustrates a cartoning machine 1 inside a plant for the production and packaging of smoking articles; the plant comprises a smoking articles manufacturing machine (not illustrated), a packaging machine that receives the smoking articles and produces the packs P, a cellophane wrapping machine that receives the packs P and wraps the packs P by using sheets of transparent plastic wrapping material, a machine that produces the inserts I and a cartoning machine 1 that obtains the assemblies formed by the groups of packs P and the inserts I and applies the overwrap S around each assembly.

[0016] Figures 3 and 4 illustrate a grouping unit 2 of the cartoning machine 1 that is set up to obtain assemblies formed by the groups of packs P and the inserts I.

[0017] The grouping unit 2 comprises a hopper 3 made to house the already formed inserts I. The hopper 3 has a vertical development and comprises an output opening 4 from which the inserts I are extracted in succession by means of a corresponding extraction device 5. The hopper 3 is designed so as to contain a single stack of already formed inserts I stacked on top of one another; more specifically, the inserts I are stacked inside the hopper 3 with their respective lower and upper walls BW, SW in contact. Advantageously, the hopper 3 is filled with the already formed inserts I obtained by the insert manufacturing machine 1 starting from a flat paper/cardboard blank, either manually by an operator or automatically.

[0018] The extraction device 5 is coupled to the output opening 4 and is designed to cyclically extract a single insert I to be fed to a downstream insert feeding assembly 6. The extraction device 5 comprises a drum 7 rotating around an axis X and provided with a number of peripheral seats 8, each designed to pick up a single insert I from the output opening 4 and to feed the same to the insert feeding assembly 6.

[0019] The insert feeding assembly 6 comprises a dragging device 16 which is designed to receive the inserts I from the drum 7 and to feed them one after the other along a substantially rectilinear path along a conveying direction D1.

[0020] Advantageously, the dragging device 16 comprises a belt conveyor; preferably of the block type. Alternatively, the dragging device 16 comprises a pushing element.

[0021] The inserts I exiting the dragging device 16 are fed to a feeding device 9. The feeding device 9 is arranged downstream of the dragging device 16 from which it receives the inserts I and is also designed to feed the inserts I in succession through a substantially rectilinear path along the conveying direction D1 and up to a grouping assembly 10. Advantageously, the feeding device 9 comprises a pair of belt conveyors 11 that come into contact with the lower and upper walls BW, SW to feed them along the conveying direction D1. In more detail, the belt conveyors 11 are configured to push the last insert I of the succession (that is, the furthest downstream insert I) into the grouping assembly 10 and to retract the second to last insert I of the succession (that is, the one that pushed the last insert I into the grouping assembly 10) so that it does not interfere with the grouping assembly 10.

[0022] The grouping unit 2 then comprises a pack feeding assembly 12, which is configured to feed the packs P grouped along a number (in particular two) of rows of five packs P arranged next to one another. The packs P are fed in succession along a conveying direction D2. Advantageously, the conveying direction D2 is substantially parallel to the conveying direction D1; preferably, the conveying directions D1, D2 have opposite directions. The pack feeding assembly 12 receives the packs P coming from the packaging machine through a conveyor (of a known type and not illustrated) and feeds them to the grouping assembly 10.

[0023] The grouping unit 2 also comprises a blank feeding assembly 13 configured to feed the flat paper/cardboard blanks B in succession along a conveying direction D3. Advantageously, the conveying direction D3 is orthogonal to the conveying directions D1, D2. The pack feeding assembly 12 receives the blanks B coming from a collecting storage unit by means of a conveyor (of a known type and not illustrated) and feeds them to the grouping assembly 10. Preferably, the blanks B are fed to the grouping assembly 10 from above.

[0024] The grouping assembly 10 is then configured to receive the packs P from the pack feeding assembly 12, the blank B from the blank feeding assembly 13 and the insert I from the insert feeding assembly 6. In more detail, the insert I is fed so as to be arranged between the group of packs P and the flat blank B. In particular, the upper wall SW faces the group of packs P while the lower wall BW faces a panel B* of the flat blank B which defines a lower wall of the package C. In greater detail, the upper wall SW faces some base walls of the packs P. The insert I is arranged at a given distance (different from zero) from both the group of packs P and the blank B; in other words, the insert I is not arranged in contact with either the group of packs P or the blank B.

[0025] Finally, the grouping unit 2 comprises a pushing element 14 which is movable along a convey direction D4. Advantageously, the convey direction D4 is orthogonal to the convey directions D1, D2, D3. The pushing element 14 comprises an arm to which an appendix is connected for the contact with the packs P. Preferably,

said appendix has a flat front surface which, in use, is arranged in contact with the upper walls of the packs P and has a size substantially uniform with the upper size of the group P of packs. The pushing element 14 is movable between a retracted position and a forward position, and vice versa. In the path to pass from the retracted position to the forward position, the pushing element 14 is arranged in contact with the upper walls of the packs P and conveys them until it intercepts the insert I which is then arranged with the upper wall SW in contact with the group of packs P in the area of the grouping assembly 10; continuing its run towards the forward position, the pushing element 14 conveys the assembly formed by the group of packs P and the insert I until it intercepts the blank B so that the lower wall BW is in contact with the panel B* in the area of a wrapping assembly 15. In the forward position, the pushing element 14 is arranged in the area of the wrapping assembly 15.

[0026] The wrapping assembly 15 comprises folding members (of a known type and not illustrated) which are configured to at least partially fold the blank B and wrap the same around the assembly formed by the group of packs P and the insert I so as to obtain a semi-finished package C.

[0027] The implemented method for the production of the package C described in the preceding disclosure is described in the following.

[0028] First of all, the method provides for a preliminary production step of the packs P, preferably provided with an overwrap obtained from a transparent plastic material, and a preliminary production step of the inserts I starting from a flat paper/cardboard blank.

[0029] The method then provides for feeding the inserts I in an alternating manner manually by an operator or automatically into the hopper 3 in order to obtain a single stack of already formed inserts I one on top of the other. The single inserts I are then extracted from the output opening 4 by the extraction device 5 and rotated substantially by 90° around the axis X.

[0030] The single inserts I extracted from the output opening 4 are laid on the dragging device 16 which feeds them one after the other through a substantially rectilinear path along the conveying direction D1. The inserts I are then transferred by the dragging device 16 to the two belt conveyors 11 that define the feeding device 9 and that feed the inserts I always through a substantially rectilinear path along the conveying direction D1 up to the area of the grouping assembly 10. In more detail, the belt conveyors 11 are configured to push the last insert I of the succession (that is, the furthest downstream insert I) into the grouping assembly 10 and to retract the second to last insert I of the succession (that is, the one that pushed the last insert I into the grouping assembly 10) so that it does not interfere with the grouping assembly 10.

[0031] Furthermore, the groups of packs P are fed in succession along the conveying direction D2, preferably parallel to the conveying direction D1, grouped along a number of rows of packs next to one another until they

reach the grouping assembly 10. Finally, the flat paper/cardboard blanks B are also fed along the conveying direction D3, preferably orthogonal to the first and second conveying directions, until they reach the grouping assembly 10.

[0032] At the grouping assembly 10, each insert I is arranged between the group of packs P and the flat blank B with the upper wall SW facing the group of packs P and the lower wall BW facing the panel B*. The pushing element 14 is then activated and moves from the retracted position to the forward position along the conveying direction D4 so as to push the group of packs P until it intercepts the insert I which is arranged with the upper wall SW in contact with the group of packs P; and, subsequently, until it intercepts the flat blank B with the panel B* that is in contact with the rear wall BW. Finally, the assembly formed by the group of packs P, the insert I and the blank B is fed to the wrapping assembly 15 so that the blank B is folded to at least partially wrap the group of packs P and the insert I so as to obtain the semi-finished package C.

[0033] Once the forward position is reached, the pushing element 14 is operated again to move from the forward position to the rear position.

[0034] According to further embodiments not illustrated, each group of packs P is formed by a number of packs P other than ten (for example five packs P, or twelve packs P) arranged next to one another in any number of rows.

[0035] The embodiment described in the preceding disclosure refers to the forming of packages comprising packs to house any smoking article (for example a pack of traditional cigarettes or cigars, a pack of electronic cigarettes of the liquid vaporization type, a pack of new generation cigarettes without tobacco combustion, etc.).

[0036] The grouping unit 2 described up to now is very easy to make, but is at the same time flexible and compact as it is formed by a small number of components. Furthermore, the applicant has verified that by using an insert I separate from the blank B it is possible to modify existing cartoning machines 1, thus containing the overall costs.

LIST OF REFERENCE NUMBERS

[0037]

- 1 cartoning machine
- 2 grouping unit
- 3 hopper
- 4 output opening
- 5 extraction device
- 6 insert feeding assembly
- 7 drum
- 8 seat
- 9 feeding device
- 10 grouping assembly
- 11 belt conveyors

12 pack feeding assembly
 13 blank feeding assembly
 14 pushing element
 15 wrapping assembly
 16 dragging device
 C package
 P packs
 I insert
 BW lower wall
 SW upper wall
 S overwrap
 B blank
 B* panel
 D1 conveying direction
 D2 conveying direction
 D3 conveying direction
 D4 conveying direction
 X axis

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Claims

1. A grouping unit (2) for a cartoning machine (1) for the production of a package (C) comprising on the inside a group with a plurality of packs (P) for smoking articles arranged next to one another and along a number of rows and an insert (I), which supports the group of packs (P); wherein the insert (I) is defined by a box-shaped body with an oblong shape having an upper wall (SW) to support the group of packs (P) and a lower wall (BW); the grouping unit (2) comprises:

- an insert feeding assembly (6) configured to feed, one after the other, the inserts (I) along a first conveying direction (D1);
- a pack feeding assembly (12) configured to feed groups of packs (P), wherein said packs (P) are grouped along a number of rows of packs next to one another and are fed in succession along a second conveying direction (D2), which is preferably parallel to the first conveying direction (D1);
- a blank feeding assembly (13) for flat blanks (B) configured to feed the paper/cardboard flat blanks (B) along a third conveying direction (D3), which is preferably orthogonal to the first and to the second conveying direction (D1, D2), wherein each flat blank (B) comprises a panel (B*), which defines a lower wall of the package (C);
- a grouping assembly (10) configured to receive said group of packs (P), said flat blank (B) and said insert (I), so that the insert (I) is interposed between the group of packs (P) and the flat blank (B) and has the upper wall (SW) facing the group of packs (P) and the lower wall (BW) facing said panel (B*);

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- a wrapping assembly (15) configured to at least partially fold the flat blank (B) and wrap it around the assembly formed by the group of packs (P) and the insert (I), so as to obtain a semi-finished package (C); and

- a pushing element (14), which is movable along a fourth conveying direction (D4), preferably orthogonal to the first conveying direction (D1), and is configured to push the group of packs (P) until it intercepts the insert (I), which is arranged with the upper wall (SW) in contact with the group of packs (P) in the area of the grouping assembly (10), and to convey the assembly formed by the group of packs (P) and of the insert (I) up to the area of the wrapping assembly (15).

2. The unit according to claim 1, wherein the insert feeding assembly (6) comprises a dragging device (16), preferably obtained by means of a belt conveyor, in particular with attachments, or a pushing device.

3. The unit according to claim 1 or 2, wherein the insert feeding assembly (6) comprises a feeding device (9), which is arranged downstream of the dragging device (16), from which it receives the inserts (I), and is designed to feed the inserts (I) along the first conveying direction (D1) up to the area of the grouping assembly (10).

4. The unit according to claim 3, wherein the feeding device (9) comprises a pair of belt conveyors (11), which come into contact with the lower and upper walls (BW, SW) of the inserts (I) in order to convey them along the first conveying direction (D1).

5. The unit according to claim 3 or 4, wherein the feeding device (9) is configured to push into the grouping assembly (10) the insert (I) arranged furthest downstream along the first conveying direction (D1).

6. The unit according to any one of the preceding claims and comprising:

- a collecting device (3) for the inserts (I) having at least one output opening (4); and
- an extraction device (5) designed to pick up the single inserts (I) from the output opening (4) and to feed them to the insert feeding assembly (6).

7. The unit according to claim 6, wherein the collecting device (3) comprises a hopper (3), where a single stack of inserts (I) arranged on top of one another is formed.

8. The unit according to claim 6 or 7, wherein the

extraction device (5) comprises a drum (7), which can rotate around an axis (X) and is provided with a number of peripheral seats (8), each designed to pick up one single insert (I) from the output opening (4) and to feed it to the insert feeding assembly (6). 5

9. A cartoning machine (1) for the production of a package (C) comprising, on the inside, a group with a plurality of packs (P) for smoking articles arranged next to one another and along a number of rows and an insert (I), which supports the group of packs (P), and comprising a grouping unit (2) according to any one of the claims from 1 to 8. 10

10. A method for the production of a package (C) comprising, on the inside, a group with a plurality of packs (P) for smoking articles arranged next to one another and along a number of rows next to one another and an insert (I), which supports the group of packs (P), and comprising the following steps: 15

- feeding, one after the other along a first conveying direction (D1) and by means of a feeding assembly (6), the inserts (I) defined by a box-shaped body with an oblong shape provided with an upper wall (SW) to support the group of packs (P) and with a lower wall (BW); 25
- feeding the groups of packs (P) in succession along a second conveying direction (D2), which is preferably parallel to the first conveying direction (D1), wherein said packs (P) are grouped along a number of rows of packs (P) next to one another; 30
- feeding the paper/cardboard flat blanks (B) along a third conveying direction (D3), which is preferably orthogonal to the first conveying direction (D1), wherein each flat blank (B) comprises a panel (B*), which defines a lower wall of the package (C); 35
- arranging each insert (I) between a respective group of packs (P) and a respective flat blank (B) with the upper wall (SW) facing the group of packs (P) and the lower wall (BW) facing said panel (B*); 40
- pushing the group of packs (P) along a fourth conveying direction (D4), which is preferably orthogonal to the first conveying direction (D1), until it intercepts the insert (I), which is arranged with the upper wall in contact with the group of packs (P); and 45
- folding the flat blank (B) so as to at least wrap it partially around the assembly formed by the group of packs (P) and the insert (I), so as to obtain the semi-finished package (C). 50

11. The method according to claim 10 and comprising the further steps of: 55

- collecting the inserts (I), preferably inside a hopper (3), so as to form a single stack of inserts (I) arranged on top of one another; and
- picking up the single inserts (I) and feeding them to the feeding assembly (6).

12. The method according to claim 10 or 11 and comprising the further steps of:

- pushing the insert (I) arranged further downstream along the first conveying direction (D1) so as to arrange it between the group of packs (P) and the flat blank (B);
- retracting the second to last insert (I), which previously pushed the further downstream insert (I), so as not to interfere with the pushing and folding steps.

13. A package (C) comprising:

- a group with a plurality of packs (P) for smoking articles arranged next to one another and along a number of rows;
- an insert (I), which supports the group of packs (P) defined by a box-shaped body with an oblong shape having an upper wall (SW) to support the group of packs (P) and a lower wall (BW); and
- an overwrap (S), which wraps the group of packs (P) and the insert (I); wherein the bottom wall (BW) of said insert (I) is arranged in contact with an inner surface of a base wall of the overwrap (S).

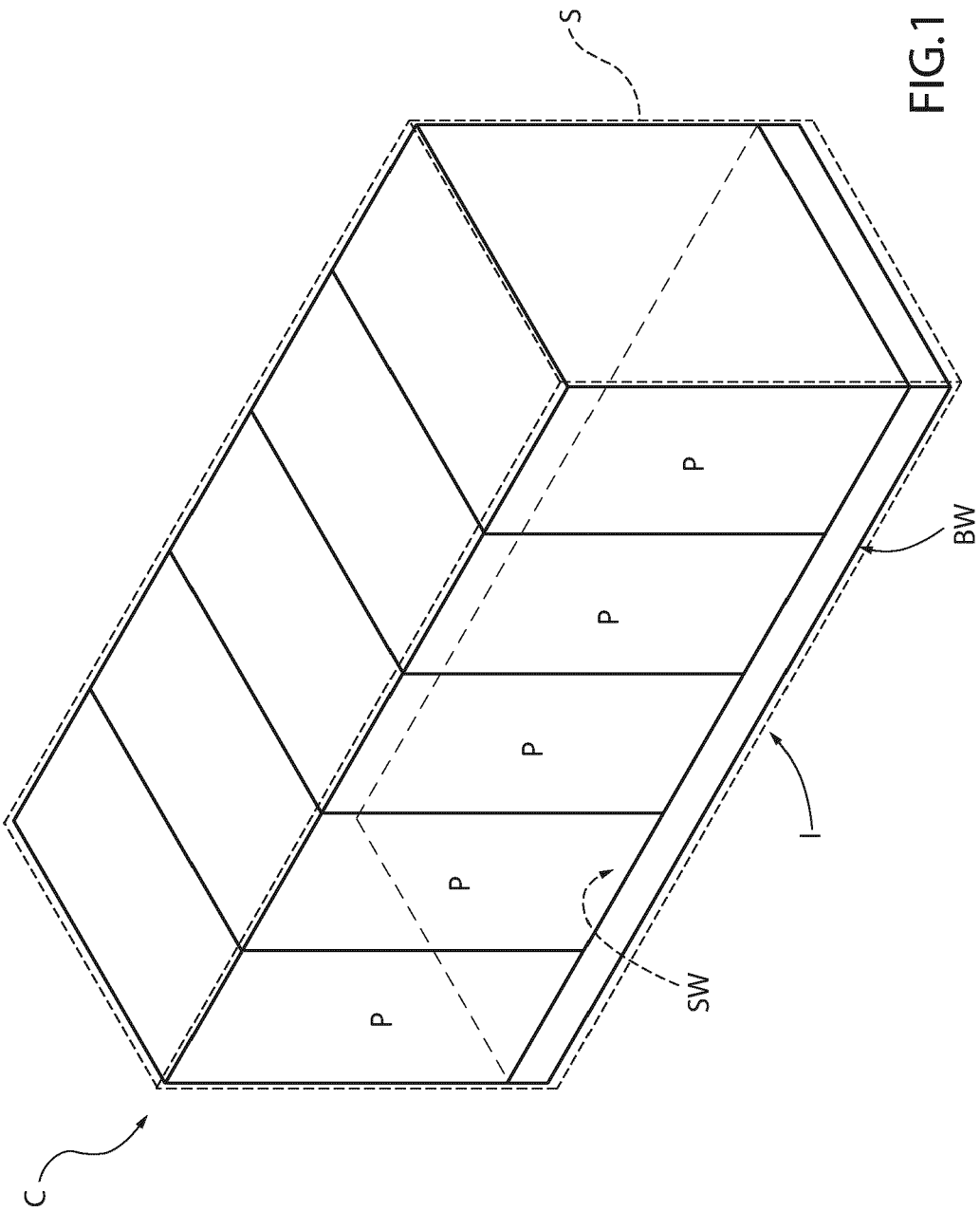


FIG.1

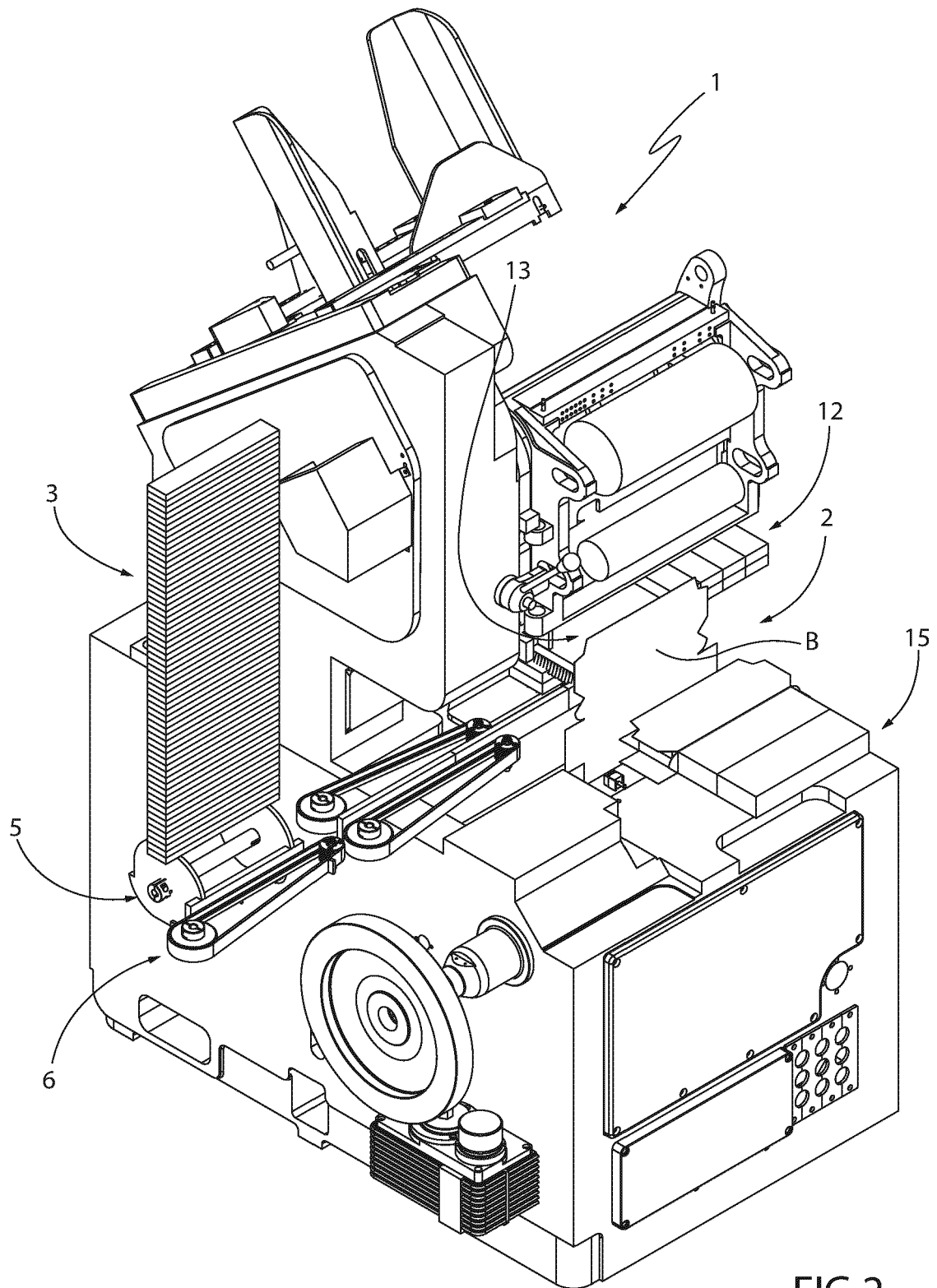


FIG.2

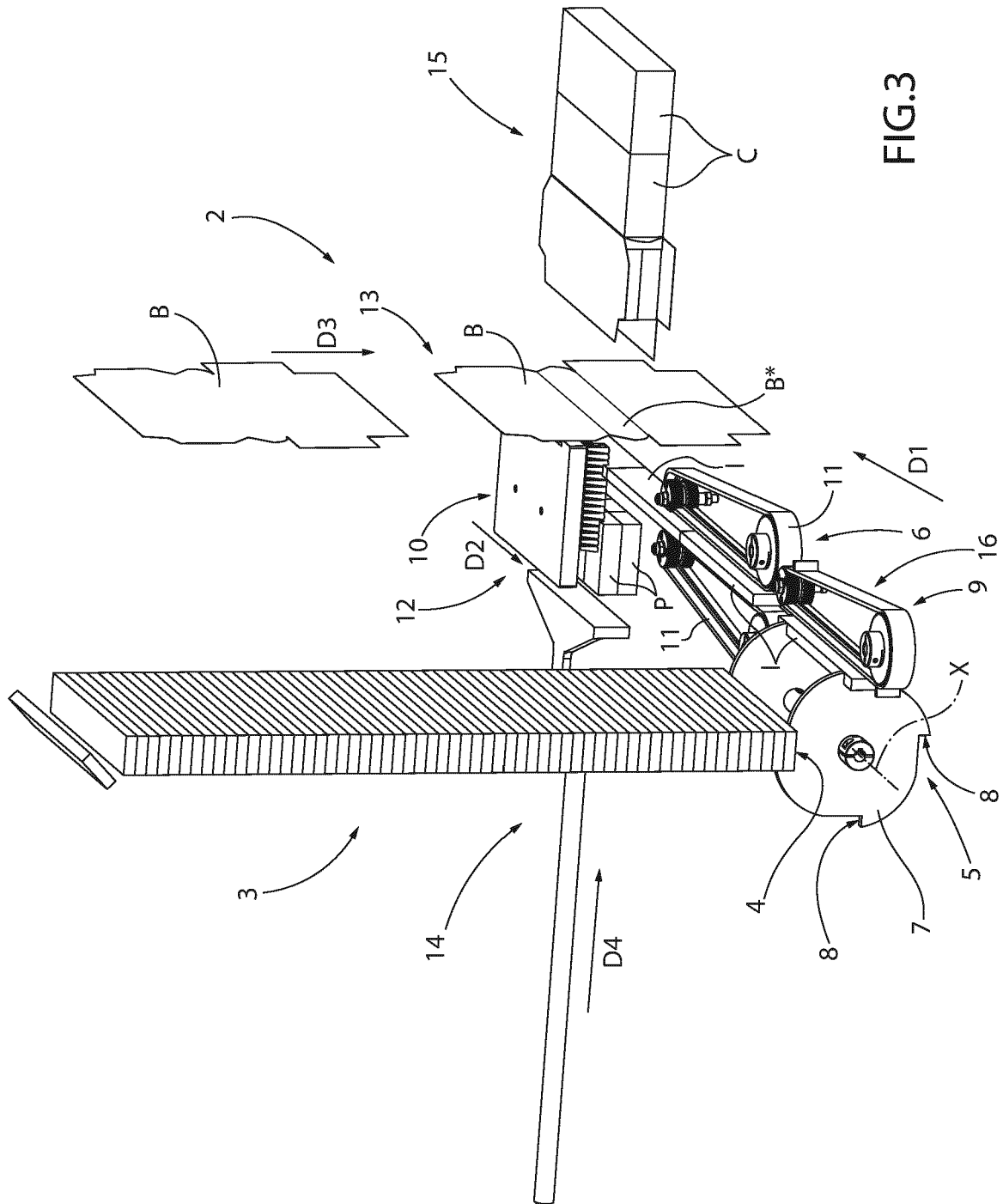


FIG. 3

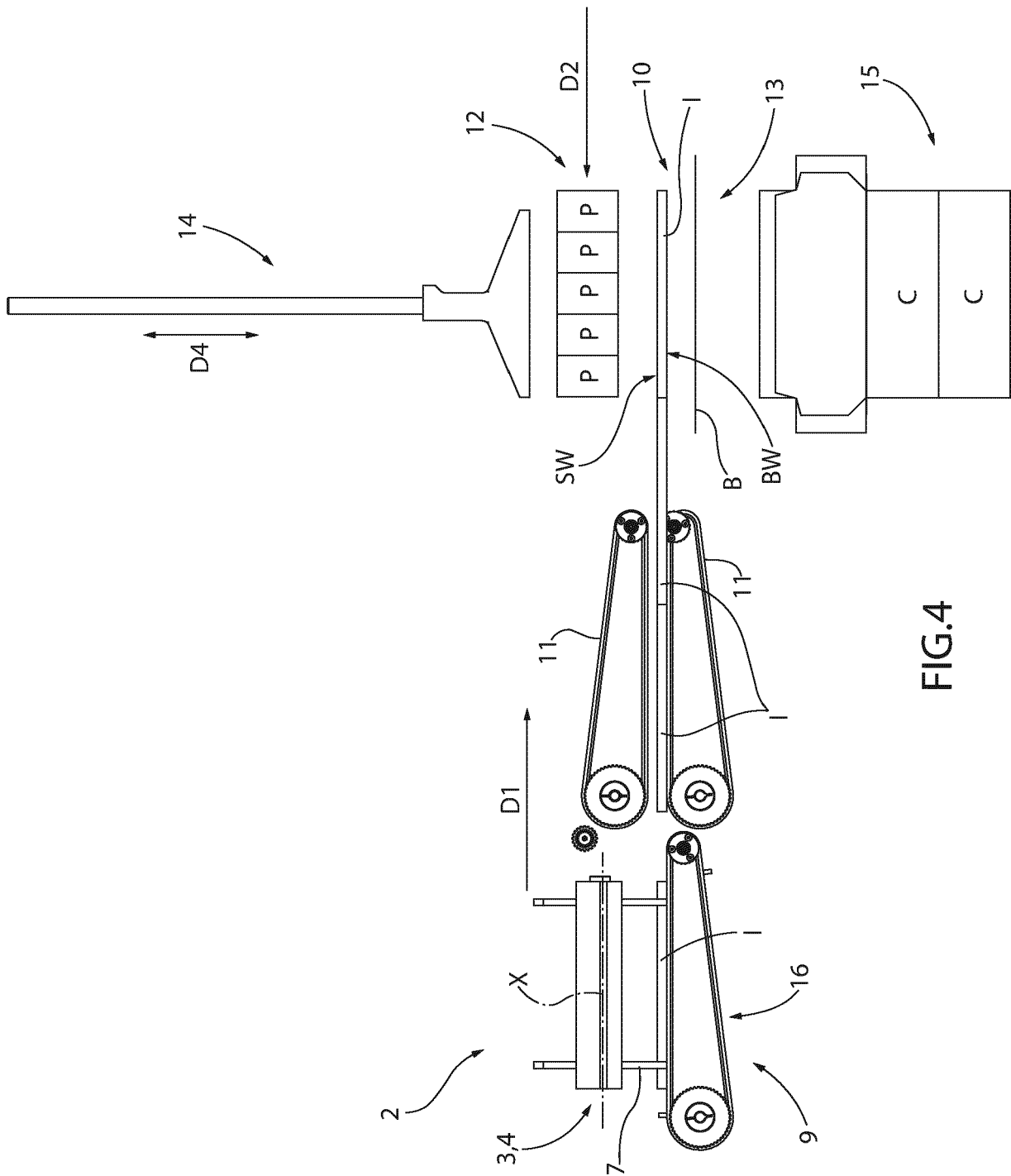


FIG.4



EUROPEAN SEARCH REPORT

Application Number

EP 24 20 7735

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A,D	EP 0 622 312 B1 (FOCKE & CO [DE]) 4 September 1996 (1996-09-04) * the whole document *	1-13	INV. B65B11/20 B65B19/22 B65D5/49 B65D85/10
A	EP 0 523 612 A1 (GD SPA [IT]) 20 January 1993 (1993-01-20) * figures *	1-13	
A	EP 2 829 483 A1 (GD SPA [IT]) 28 January 2015 (2015-01-28) * figures *	1-13	
A	US 2 783 929 A (DELANEY PATRICK P) 5 March 1957 (1957-03-05) * figures *	1-13	
A	EP 0 346 025 A1 (PHILIP MORRIS [US]) 13 December 1989 (1989-12-13) * figures *	1-13	
			TECHNICAL FIELDS SEARCHED (IPC)
			B65B B65D
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
Munich		9 May 2025	Lawder, M
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			
T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 24 20 7735

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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09 - 05 - 2025

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
EP 0622312	B1	04-09-1996	BR	9401598 A	22-11-1994
			CN	1096992 A	04-01-1995
			DE	4313644 A1	27-10-1994
			EP	0622312 A2	02-11-1994
			JP	3786978 B2	21-06-2006
			JP	H0789583 A	04-04-1995
			US	5431277 A	11-07-1995

EP 0523612	A1	20-01-1993	BR	9202724 A	23-03-1993
			DE	69222478 T2	26-02-1998
			EP	0523612 A1	20-01-1993
			JP	H089361 B2	31-01-1996
			JP	H05221402 A	31-08-1993
			US	5193328 A	16-03-1993

EP 2829483	A1	28-01-2015	CN	104340414 A	11-02-2015
			EP	2829483 A1	28-01-2015
			US	2015031519 A1	29-01-2015

US 2783929	A	05-03-1957	NONE		

EP 0346025	A1	13-12-1989	DE	68909844 T2	05-05-1994
			EP	0346025 A1	13-12-1989
			JP	2684416 B2	03-12-1997
			JP	H0257549 A	27-02-1990
			US	4944394 A	31-07-1990

EPO FORM P0459

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- IT 102023000022230 [0001]
- EP 622312 B1 [0005]
- EP 523612 A1 [0007]